

REMARKS

The Applicants sincerely appreciate the Examiner's thorough examination of the present application as evidenced by the Office Action of December 29, 2005 ("the Office Action"). In particular, the Applicants appreciate the Examiner's indication that Claims 54-60 are allowed and that Claims 5-6, 9-20, 23-24, 26-41, 44, and 52-53 would be allowable if rewritten in independent form. In response, the Applicants have amended Claim 1 to include all recitations of Claim 5 (indicated allowable); canceled Claim 5; amended Claim 6 to depend from Claim 1; rewritten dependent Claims 9, 15, 19, and 20 in independent form (indicated allowable); amended Claim 21 to include all recitations of Claim 35 (indicated allowable); rewritten Claim 22 in independent form; rewritten Claims 27, 29, and 41 in independent form (indicated allowable); amended Claim 35 to provide further definition; amended Claims 36 and 40 to depend from Claim 21; amended Claims 42 and 43 to more clearly define the claimed invention; rewritten Claim 52 in independent form (indicated allowable); canceled independent Claim 61; and added dependent Claim 62.

Accordingly, Claims 1-4, 6-21, 27-41, 52, 54-60, and 62 are in a condition indicated allowable by the Examiner. In the following remarks, the Applicant will shown that Claims 22 and 42 are patentable over the cited art. The Applicant has not rewritten Claims 23, 24, or 26 (which have been indicated allowable) in independent form because these claims depend from Claim 22 which is patentable for the reasons discussed below. The Applicant has not rewritten Claims 44 or 53 (which have been indicated allowable) in independent form because these claims depend from Claim 42 which is patentable for the reasons discussed below. Accordingly, the Applicants respectfully submit that all claims are in condition for allowance, and a Notice of Allowance is requested in due course.

All Claim Rejections Under 35 U.S.C. Sec. 112 Have Been Overcome

The Office Action states that Claim 61 has been rejected under 35 U.S.C. Sec. 112, second paragraph as being indefinite. As noted above, Claim 61 has been canceled to reduce issues for further consideration. Accordingly, all claim rejections under 35 U.S.C. Sec. 112 have been overcome.

All Objections To The Specification And Drawings Have Been Overcome

The Office Action has objected to the specification as failing to provide proper antecedent basis for the subject matter of Claims 54 and 57. The Office Action further states that the drawings have been objected to under 35 C.F.R. 1.83(a), and that the drawings must show every feature specified in the claims referring in particular to Claims 54 and 57.

In response, the Applicant respectfully submits that all elements of Claims 54 and 57 are illustrated, for example, in Figures 2a-b as originally filed, and that antecedent basis for all elements of Claims 54 and 57 is provided, for example, in Figures 2a-b and in related portions of the specification. To clarify the antecedent basis for Claims 54 and 57, language of Claims 54 and 57 has been inserted with reference numbers at page 14, after line 11, to provide a mapping of elements of Claims 54 and 57 to the substrate of Figures 2a-b according to some embodiments of the present invention. Accordingly, all objections to the specification and the figures have been overcome.

Claim 22 Is Patentable Over The Cited Art

Claim 22 has been rejected under 35 U.S.C. Sec. 102(e) as being anticipated by U.S. Patent No. 6,563,205 to Fogal *et al.* (hereinafter "Fogal"). The Applicant respectfully submits, however, that Claim 22 is patentable over Fogal for at least the reasons discussed below.

Claim 22 has been rewritten in independent form, and thus recites an electronic device comprising:

- a printed circuit board;
- a first electronic substrate on the printed circuit board;
- a second electronic substrate on the first electronic substrate wherein the first electronic substrate is between the printed circuit board and the second electronic substrate;
- a third electronic substrate on the second electronic substrate wherein the second electronic substrate is between the first and third electronic substrates, wherein the second electronic substrate is offset relative to the first and third electronic substrates so that the first and third electronic substrates extend beyond an end of the second electronic substrate;
- a first electrical and mechanical connection between the first and third electronic substrates; and
- a second electrical and mechanical connection between the second and third electronic substrates.

The Applicant respectfully submits that Fogal fails to teach or suggest the structure of Claim 22. In support of the rejection of Claim 22, the Office Action states that:

Regarding Claim 22, Fogal discloses an electronic device further comprising: a first electrical and mechanical connection between the first and third electronic substrates (50 of Fig. 4); and a second electrical and mechanical connection between the second and third electronic substrates (50 of Fig. 4).

Office Action, page 7. Interpreting the first die 18, the second die 28, and the third die 54 of Fogal as respective first, second, and third electronic substrates, the bonding wires 50 of Fogal do not provide electrical and mechanical connection between the first die 18 and the third die 54 or between the second die 28 and the third die 54. As discussed in Fogal:

A plurality of second bonding wires 50 are bonded to and between respective second die bonding pads 36 and substrate 12.

Fogal, col. 4, lines 64-67. The side view provided by Figure 4 of Fogal does not clearly illustrate connections provided by the bonding wires 50. The view provided by Figure 5 of Fogal, however, does illustrate the connection provided by the bonding wires 50 between the second die 28 and the substrate 12. Accordingly, Fogal fails to teach or suggest electrical and mechanical connection between the first and third die 18 and 54 and/or electrical and mechanical connection between the second and third die 28 and 54.

For at least the reasons discussed above, the Applicant respectfully submits that Claim 22 is patentable over Fogal. In addition, dependent Claims 23-26 are patentable at least as per the patentability of Claim 22 from which they depend. Various ones of dependent Claims 23-26 are also separately patentable. Dependent Claims 23-24 and 26, for example, are separately patentable as indicated on page 12 of the Office Action.

Claim 42 Is Patentable Over The Cited Art

Claim 42 has been rejected under 35 U.S.C. Sec. 102(e) as being anticipated by U.S. Publication No. 2005/0146010 to Moden *et al.* (hereinafter "Moden"). The Applicant respectfully submits, however, that Claim 42 is patentable over Moden for at least the reasons discussed below.

Claim 42 has been amended to include recitations from Claim 43. As amended, Claim 42 recites an electronic device comprising:

- a first electronic substrate having opposing first and second surfaces;
- a second electronic substrate on the first electronic substrate, the second electronic substrate having opposing first and second surfaces;
- a third electronic substrate on the second electronic substrate, the third electronic substrate having opposing first and second surfaces, wherein the second electronic substrate is between the first and third electronic substrates, wherein the first surface of the second electronic substrate is adjacent the second surface of the first electronic substrate, and wherein the second surface of the second electronic substrate is adjacent the first surface of the third electronic substrate; and
- a signal path extending along a first conductive trace on the first surface of the second electronic substrate, to the second surface of the first electronic substrate, along a second conductive trace on the second surface of the first electronic substrate, to the first surface of the third electronic substrate, along a third conductive trace on the first surface of the third electronic substrate, and to the second surface of the second electronic substrate.

Accordingly, adjacent surfaces of the first and second substrates (*i.e.*, the first surface of the second electronic substrate and the second surface of the first electronic substrate) both have conductive traces thereon (*i.e.*, the first conductive trace on the first surface of the second electronic substrate and the second conductive trace on the second surface of the first electronic substrate).

The Applicant respectfully submits that Moden fails to teach or suggest conductive traces on adjacent surfaces of two substrates. In support of the rejection of Claim 42, the Office Action states that Moden discloses:

a signal path (24 of Fig. 2, for example) extending along the first surface of the second electronic substrate (Fig. 1), to the second surface of the first electronic substrate (Fig. 1), along the second surface of the first electronic substrate (24 of Fig. 2 through 14 of Fig. 1), to the first surface of the third electronic substrate (Fig. 1), along the first surface of the third electronic substrate (24 of Fig. 2 through 14 of Fig. 1), and to the second surface of the second electronic substrate.

Office Action, pages 7-8. As discussed with respect to Figure 2 of Moden:

a carrier 12 having circuits 24 thereon extending between the contact pads 18 on the upper surface 20 of the carrier is illustrated. (Underline added.)

In re Glenn A. Rinne
Application Ser. No.: 10/689,976
Filed: October 21, 2003
Page 23

Moden, paragraph 21. As shown in Figure 3 of Moden, the lower surface 22 (also referred to as the bottom surface 22) of the carrier 12 of Moden does not include circuits 24 thereon. As shown in Figure 1 of Moden, the carriers 12 of Moden are stacked with an upper surface 20 (with circuits 24 thereon) of one carrier 12 adjacent a lower surface 22 (without circuits 24 thereon) of a next carrier 12. Accordingly, Moden fails to teach or suggest conductive traces on adjacent surfaces of different electronic substrates.

For at least the reasons discussed above, the Applicant respectfully submits that Claim 42 is patentable. The Applicant further submits that dependent Claims 43-51 and 53 are patentable at least as per the patentability of Claim 42 from which they depend. Various of these claims are also separately patentable. Dependent Claims 44 and 53, for example, are separately patentable as indicated on page 12 of the Office Action.

CONCLUSION

Accordingly, the Applicants submit that all pending claims in the present application are in condition for allowance, and a Notice of Allowance is respectfully requested in due course. The Examiner is encouraged to contact the undersigned attorney by telephone should any additional issues need to be addressed.

Respectfully submitted,



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